Amendments to the Claims

What is claimed is:

1. (currently amended) An apparatus for generating finite impulse response (FIR)

filter coefficients comprising:

(a) an address generator that multiplies a desired cutoff frequency f_i by an integer n based on an outside control signal to generate an address;

(b) a first look-up table that generates a sine function value of said address;

(c) a divider that divides said sine function value by $n\pi$;

(d) a multiplexer that generates an impulse response function value by selecting one of a first value provided by said divider and $2f_i$ based on ~~an~~ said outside control signal; and

(e) a multiplier that multiplies said impulse response

function value by a corresponding window function value to generate an nth filter coefficient value.

2. (currently amended) The apparatus of claim 1, wherein said multiplexer generates said impulse response function value by selecting said first

value if n is equal to [[0]] zero or by selecting $2f_i$ if n is not equal to [[0]] zero.

3. (currently amended) The apparatus of claim 1, wherein n=0, 1, 2,...,N-1 where N represent a number of said FIR filter ~~taps~~ coefficients.

4. (currently amended) The apparatus of claim 1, wherein said nth filter coefficient value can be non-zero only when $-\frac{N-1}{2} \leq n \leq \frac{N-1}{2}$, where N represents a number of said FIR filter ~~taps~~ coefficients.

5. (currently amended) The apparatus of claim 1, wherein said corresponding window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming, and Blackman window functions.

6. (original) The apparatus of claim 1, further comprising a second look-up table that receives the integer n and generates said corresponding window function value.

7. (currently amended) An apparatus for generating low-pass ~~or~~, high pass or band-pass FIR filter coefficients using more than one low-pass filter coefficient generating devices having different desired cutoff frequencies, the

apparatus comprising:

(a) at least two low-pass filter coefficient generating devices, each of said devices comprises

(a1) an address generator that multiplies a desired cutoff frequency f_l by an integer n ~~based on an outside control signal~~ to generate an address,

(a2) a first look-up table that generates a sine function value of said address,

(a3) a divider that divides said sine function value by $n\pi$,

(a4) a ~~multiplexter~~ multiplexer that generates an impulse response function value by selecting one of a first value produced by said divider and 2 f_l based on ~~an~~ said outside control signal, and

(a5) a multiplier that multiples said impulse response function value by a corresponding window function value to generate an nth low-pass filter coefficient value; and

(b) an adder coupled to said devices for generating an nth low pass, ~~or~~ high-pass or band pass filter coefficient value by adding ~~or subtracting~~ each of said ~~Nth~~ nth low-pass~~, high-pass or band-pass~~ filter ~~coefficients~~ coefficient values generated by said devices in the step (a5).

8. (currently amended) The apparatus of claim 7, wherein said multiplexer generates said impulse response function value by selecting said first

value if n is equal to [[0]] zero or by selecting $2f_i$ if n is not equal to [[0]] zero.

9. (currently amended) The apparatus of claim 7, wherein n=0,1,2,...,N-1, where N represents a number of said FIR filter ~~taps~~ coefficients.

10. (currently amended) The apparatus of claim 7, wherein ~~wherein~~ said nth filter coefficient value generated in the step (b) can be nonzero only when $-\frac{N-1}{2} \leq n \leq \frac{N-1}{2}$, where N represents a number of said FIR filter ~~taps~~ coefficients.

11. (currently amended) The apparatus of claim 7, wherein said corresponding window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming and Blackman window functions.

12. (original) The apparatus of claim 7, wherein each of said devices further comprises a second look-up table that receives the integer n and generates said corresponding window function value.

13. (currently amended) A method for generating finite impulse response (FIR) filter coefficients, the method comprising,

(a) generating an address by multiplying a desired cutoff frequency f_i by an integer n ~~based on an outside control signal~~;

(b) generating a sine function value of said address;

(c) dividing said sine function value by $n\pi$;

(d) generating an impulse response function value by selecting one of a first value produced from said division in the step (c) and $2f_i$ based on ~~an~~ said outside control signal; and

(e) generating an nth filter coefficient value by multiplying said impulse response function value by a corresponding window function value.

14. (original) The method of claim 13, wherein said impule response function value is generated by selecting said first value if n is equal to zero or by selecting $2f_i$ if n is not equal to zero.

15. (currently amended) The method of claim 13, wherein n=0,1,2,..., N-1, where N represents a number of said FIR filter ~~taps~~ coefficients.

17 ~~16~~. (currently amended) The method of claim 13, wherein said nth filter coefficient value can be non-zero only when $-\frac{N-1}{2} \le n \le \frac{N-1}{2}$, where N represent a number of said FIR filter ~~taps~~ coefficients.

19 ~~17~~. (currently amended) The method of claim 13, wherein said ~~corresponding~~ window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming, and Blackman window functions.

20 ~~18~~. (original) The method of claim 13, wherein said corresponding window function value is a $(n+(N-1)/2)$th window function value, wherein N represents the number of filter coefficients.

16 ~~19~~. (new) The method of claim 15, wherein the number of said FIR filter coefficients is determined by a number of taps.

18 ~~20~~. (new) The method of claim 16, wherein the number of said FIR filter coefficients is determined by a number of taps.